



Benicia Refinery • Valero Refining Company - California

3400 East Second Street • Benicia, California 94510-1097 • Telephone (707) 745-7011 • Facsimile (707) 745-7339

Via Email Notification

July 8, 2020

Reportable Flaring Event Causal Analysis
May 25, 2020
Plant No. B2626

Mr. Jack Broadbent
Bay Area Air Quality Management District
Bay Area Metro Center
375 Beale Street, Suite 600
San Francisco, CA 94105

Dear Mr. Broadbent:

A reportable flaring event occurred on May 25th, 2020 at the Valero Refining Company – California, Benicia Refinery (Valero Refinery) (Id. No. B2626). The following Causal Analysis for this Reportable Flaring Event is provided to the Bay Area Air Quality Management District (District) pursuant to and in accordance with Section 12-12-406 and the District's Compliance Advisory dated June 25, 2007.

1. *Date on which the report was drafted (12-12-406).*
July 8, 2020
2. *The refinery name and site number (12-12-406).*
Valero Refinery, Id. No. B2626
3. *The assigned refinery contact name and phone number (12-12-406).*
Kimberly Ronan at (707) 745-7990
4. *Identification of the flare(s) at which the reportable event occurred by reviewing water seal monitoring data to determine which seals were breached during the event (12-12-406).*
South (S-18) and North (S-19) Flare
5. *The flaring event duration for each affected flare (12-12-406.1):*
 - a) *The date(s) of the event;*
 - b) *The start and end time of the event; and*
 - c) *The net duration of event (in hours and minutes).*

Item	South Flare (S-18)	North Flare (S-19)	Flare Event Total
Start Date	5/25/2020	5/25/2020	5/25/2020
Start Time (hh:mm)	15:43	12:18	12:18
End Date	5/26/2020	5/26/2020	5/26/2020
End Time (hh:mm)	14:30	14:58	14:58
Duration (hh:mm)	22:47*	26:40*	26:40*

*Flaring was intermittent during this time period

6. A brief description of the flaring event (12-12-406.1) (e.g., "flaring due to turnaround maintenance").

Flaring was due to an inability to recover the full flare load as a result of decommissioning compressor C2101B as part of the flare gas recovery project. The flare reporting threshold was slightly exceeded for two consecutive days.

7. A process flow diagram showing the equipment and process units that were the primary cause of the event (12-12-406.1).

The relevant piping and instrumentation diagrams (P&IDs) are attached and highlighted.

Please note that the attached P&ID contains information that the Valero Refinery considers to be trade secret and confidential business information (CBI) as defined by the California Public Records Act, Government Code § 6254.7 et seq., and the Freedom of Information Act, 40 CFR Part 2 (40 CFR § 2.105(a)(4)), 5 USC 552(b)(4), and 18 USC 1905. Because of the sensitive and competitive nature of this information, the Valero Refinery requests that the District afford the information CBI status and treatment indefinitely.

8. The total volume of vent gas flared (MMSCF) throughout the event (12-12-406.5).

Item	South Flare (S-18)	North Flare (S-19)	Flare Event Total
5/25/2020			
Volume (MMSCF)	0.002	0.572	0.574
5/26/2020			
Volume (MMSCF)	0.002	0.518	0.520
Flare Event Total			
Volume (MMSCF)	0.004	1.09	1.094

9. The emissions associated with the flaring event per calendar day (12-12-406.5):

- a) # methane (CH₄) emitted;
- b) # non-methane hydrocarbon emitted; and
- c) # SO₂ emitted.

Also provide the assumptions used to calculate emissions associated with the flaring event if they are different from those used for reporting under Regulation 12, Rule 11.

Item	South Flare (S-18)	North Flare (S-19)	Daily Total
5/25/2020			
CH4 (lbs)	2	146	148
NMHC's (lbs)	0	201	201
SO2 (lbs)	0	60	60
5/26/2020			
CH4 (lbs)	1	152	153
NMHC's (lbs)	0	148	148
SO2 (lbs)	0	129	129
Flare Event Total			
CH4 (lbs)	3	299	301
NMHC's (lbs)	0	349	350
SO2 (lbs)	0	190	190

The assumptions used to calculate emissions associated with the flaring event are consistent with those used for reporting under Regulation 12, Rule 11.

10. *A statement as to whether or not the gas was scrubbed to eliminate or reduce any entrained compounds and a list of the compounds for which the scrubbing was performed (12-12-406.1).*

The vent gases flared during this event were not scrubbed.

11. *The primary cause of the flaring event including a detailed description of the cause and all contributing factors. Also identify the upstream process units that contributed vent gas flow to the flare header and provide other flow instrumentation data, where available (12-12-406.1).*

The primary cause of the May 25th-26th flaring event was an absence of a second flare gas compressor to manage the flare load during this period. Due to the active flare gas recovery project, C2101B was permanently taken out of service and removed to accommodate the construction of the new flare gas compressor, which is scheduled to be complete in July/August 2020. This project was given an Authority to Construct from BAAQMD on May 7, 2019 (Permit Application No. 29513).

In addition to the normal sources to the flare header, safety valve SV404A, located in the Hydrocracker, lifted early and could not be fully isolated by the existing block valves. Typically, the second flare gas compressor would be commissioned to manage this additional flare gas load, however it was not available during this time due to the project activity.

The refinery Fuel Gas Seriatim was initiated to implement a systematic set of actions, including unit rate cuts and other operational modifications designed to reduce flare load to the flare header. These procedures minimize flaring while maintaining safety of personnel and equipment.

12. *Describe all immediate corrective actions to stabilize the flaring event, and to reduce or eliminate emissions (flare gas recovered or stored to minimize flaring during the*

event). If a decision was made not to store or recover flare gas, explain why (12-12-406.1).

Immediate corrective actions that were taken to stabilize the flaring event and to reduce or eliminate emissions include:

- A. Control House monitoring
- B. The refinery Fuel Gas Seriatim was initiated. These procedures are intended to minimize flaring and ensure the safety of personnel and equipment. The Valero Refinery has developed specialized procedures to comply with the unique requirements imposed by the BAAQMD's stringent flare rule Reg. 12-12.
- C. On May 27th, a sealant injection process was implemented on SV404A to eliminate the leak by, thereby reducing the overall load to the flare header system.

The Valero Refinery does not have the ability to store flare gas. Per Section 4.2 of the FMP, the ability to store flare gas is not a cost effective prevention measure.

13. *Was the flaring the result of an emergency (See definition in Reg. 12-12-201)? If so, was the flaring necessary to prevent an accident, hazard or release to the atmosphere (12-12-406.4)?*

This section is not applicable, as this flaring incident was not the result of an emergency.

14. *If not the result of an emergency and necessary to prevent an accident, hazard or release to the atmosphere, was the flaring consistent with an approved FMP? If yes, provide a citation to the facility's FMP and any explanation necessary to understand the basis for this determination (12-12-406.3).*

Pursuant to Regulation 12-12-301, flaring is prohibited unless it is consistent with an approved FMP. The current approved FMP is Revision 15.0 dated September 30, 2019. This series of events is consistent with Section 2.2 of the Valero Refinery FMP, Reasons for Flaring:

2.2.2 – Fuel Gas Quantity and Quality

2.2.3 – Equipment Failure and Malfunction (Loss of a Compressor)

15. *If the flaring was due to a regulatory mandate to vent to a flare, why couldn't the gas be recovered, treated, and used as fuel gas (12-12-406.4)?*

The flaring was not due to a regulatory mandate to vent to a flare. The flaring was consistent with the Valero Refinery's approved FMP.

16. *Identify and describe in detail each prevention measure (PM) considered to minimize flaring from the type of reportable flaring event that occurred (12-12-406.2):*

- a) *State whether the PM is feasible (and will be implemented), or not feasible.*
- b) *Explain why the PM is not feasible, if applicable.*

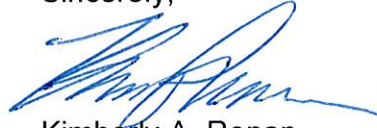
During a post-incident review of the flaring event, the following additional prevention measures were identified in order to prevent a similar flaring event from reoccurring in the future:

Mr. Jack Broadbent, BAAQMD
July 8, 2020
Page 5

- A. Complete the flare gas recovery project to restore the ability to utilize the second flare gas compressor when needed.

Please contact Ms. Kimberly Ronan at (707) 745-7990 if you have any questions on this reportable flare event.

Sincerely,



Kimberly A. Ronan
Manager – Environmental Engineering

ecc:

Compliance@baaqmd.gov;

Chris Crowley ccrowley@baaqmd.gov;

Christopher Thompson cthompson@baaqmd.gov

Enclosures: (1 P&ID)

36-000-03E-73503 – Confidential Business Information (CBI)